human performance in space travel environments: effects of acceleration, cosmic radiation, pressure, temperature, weightlessness, reentry, decelerations, etc. Brief analysis is given of human requirements for space crew personnel. It is stated in this book that the Soviet Union since 1949 has organized an extensive study of these problems and has established space medicine as an independent branch of science. No personalities are mentioned. There are no references.

TABLE OF CONTENTS:

Man in Space (Cont.) SOV/1287

AVAILABLE: Library of Congress

IS/sfm
3-2-59

Card 3/3

GINDIN, Ye.Z.; LEYKIN, G.A.; LOZINSKIY, A.M.; MASEVICH, A.G.; AL'PERT, Ya.L.; CHUDESENKO, E.F.; SHAPIRO, B.S.; GAIKIN, A.M.; GORLOV, G.G.; KOTOVA, A.P.; KOSOV, I.I.; PETROV, A.V.; SEDOV, A.D.; CHERNOV, V.N.; YAKOVLEV, V.I.; MIKHAYLOV, A.A., otvetstvennyy red.; BEN'KOVA, N.P., doktor fiz.-mat. nauk, otvetstvennyy red.; SILKIN, B.I., red.; PODOL'SKIY, A.D., red.; PHUSAKOVA, T.A., tekhn. red.

[Preliminary results of the scientific research on the first Soviet artificial earth satellites and rockets; collection of articles in the 11th section of the IGY program (rockets and satellites)] Predvaritel'nye itogi nauchnyykh issledovanii s pomoshch'iu pervykh sovetskikh iskusstvennykh sputnikov zemli i raket; sbornik statei (XI razdel programmy MGG - rakety i sputniki). Moskva, Izd-vo Akad. nauk SSSR. No.1. 1958. 148 p. (MIRA 11:10)

1. Russia (1923- U.S.S.R.) Mezhduvedomstvennyy komitet po provedeniyu Mezhdunarodnogo geofizicheskogo goda. 2. Chlen-korrespondent AN SSSR (for Mikhaylov).

(Atmosphere, Upper—Rocket observations)
(Artificial satellites)

YAKOVLEV, V. I.

S/726/58/000/001/003/004
E195/E385

AUTHORS: Galkin, A.N., Gorlov, O.G., Kotova, A.R., Kosov, I.I., Petrov, A.V., Serov, A.D., Chernov, V.N. and Yakovleb, V.I.

TITLE: Investigation of the vital activity of animals during flight in an airtight rocket cabin to an altitude of 212 km

SOURCE: Predvaritel'nyye itogi nauchnykh issledovaniy s pomoshch'yu pervykh sovetskikh iskusstvennykh sputnikov Zemli i raket; sbornik statey, no. 1, XI razdel programmy MGG (rakety i sputnik). Moscow, Izd-vo AN SSSR. 112 - 129 1958

TEXT: The behavior of animals during high-altitude flight in rockets as well as their state of health and changes registered after the flight have been studied in the USSR since 1949. The results of investigations carried out on 14 dogs of 5 - 7 kg in weight are described. Their blood pressure, pulse, respiration, before, during and after the flight were registered, cardiograms were made and their behavior during the flight filmed. A short

Card 1/2

Investigation of ....

description of the airtight cabin and its equipment is given. The conditions of rocket flights to altitudes of 100 to 212 km did not produce sudden changes from the normal in the physiological functions of animals nor in their behavior and health, kept under control after the flight. Some of the animals used in the tests were narcotized. During the active part of the flight the heartbeats, breathing and blood pressure of the non-narcotized animal usually increased. In the period of dynamic weightlessness the registered physiological parameters reached a high level with a decreasing tendency during the first 2-3 minutes. The return to the starting level of physiological conditions took place after 5 -6 min. of the action of dynamic weightlessness. There are 12 figures and 5 tables.

Card 2/2

YAKOVLEV, V.I.

S/726/58/000/001/004/004
E195/E385

AUTHORS: Bugrov, B.G., Gorlov, O.G., Petrov, A.V., Serov, A.D., Yugov, Ye.M. and Yakovlev, V.I.

TITLE: Investigation of the vital activity of animals during flight in a non-airtight rocket cabin to an altitude of 110 km

SOURCE: Predvaritel'nyye itogi nauchnykh issledovaniy s pomoshch'yu pervykh sovetskikh iskusstvennykh sputnikov Zemli i raket; sbornik statey. no. 1. XI razdel programmy MGG (rakety i sputniki). Moscow, Izd-vo AN SSSR. 130 - 149 1958

TEXT: The use was investigated of ventilation scaphanders with oxygen masks to provide the necessary living conditions for animals during flight in a non-airtight rocket cabin to a height of 110 km and during catapulting at great flight speed at an altitude of 80 - 90 km, as well as the effect of specific flight factors on the organism of animals in the upper layers of the atmosphere. All the investigations were carried out on 12 dogs, six of which took part in two flights. The special equipment and the method of

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S/726/58/000/001/004/004
E195/E385

investigation are described. Catapulting at an altitude of 75-85 km at 660-730 m/sec and at an altitude of 39-46 km at 1000-1100 m/sec does not significantly affect the physiological functions of an animal. Parachute systems provide safe landing and rescuing of animals with equipment that reached an altitude of 75-85 km. Animals do not experience significant changes in the function of the circulatory and respiratory systems during flight in a rocket. The changes of the arterial pressure, pulsation and breathing are quite small. In some cases these changes are accompanied by the development of the passive-defensive reactions. The animals that were subject for 3.7 min to the conditions of complete or partial weightlessness have a tendency to certain lowering of arterial pressure and to a decrease of heartbeats. No changes could be observed in the behavior or in the physiological functions of the animals, in the pigmentation of the skin or the fur, which could be considered as a result of cosmic radiation effect during the flight. The checking of animals for 6-7 months after the flight did not give any information about changes in their health or behavior.. The equipment in the rocket during the

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Investigation of ....

S/726/58/000/001/004/004
E195/E385

flight provided general registration of physiological functions of the animal. Nevertheless, it is necessary to improve this equipment. There are 9 figures and 2 tables.

Card 3/3

2c

L 27825-65 ENG(j)/EWT(m)/FCC/T IJP(c)
ACCESSION NR: AT4049951 S/2504/64/026/000/0017/0117

AUTHOR: Vavilov, Yu.N.; Dovzhenko, O.I.; Nesterova, N.M.; Nikol'skiy, S.I.; Pomanskiy, A.A.; Tukish, Yo.I.; Yakovlev, V. I.

62
14
B+1

TITLE: Extensive cosmic ray air showers 19

SOURCE: AN SSSR. Fizicheskiy institut. Trudy*, v. 26, 1964. Kosmicheskiye luchi (Cosmic rays), 17-117

TOPIC TAGS: air shower, cosmic radiation, pi meson, secondary particle, nuclear cascade, nucleon, hodoscopic counter, Wilson chamber, ionization chamber, Cerenkov radiation, cosmic ray burst, air shower core, mu meson

ABSTRACT: The question of air showers is treated at length on the basis of work done from 1952 to 1959. Pp. 18-39 deal with methods of studying extensive air showers. The method used by the 1952 Pamir expedition is described. Individual sections deal with each of the following: the method of correlated hodoscopes used in the measurement of shower particle flux at the observation level; hodoscope detectors of μ-mesons and nuclear-active particles; the use of ionization chambers for the study of air showers; observation of Cerenkov radiation in extensive showers; and the use of the Wilson cloud chamber and scintillation counters in the study of air showers. Pp. 39-72 deal with the composition of extensive air showers.

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L 27825-65

ACCESSION NR: AT4049951

Individual sections are devoted to: radial distribution of charged particles; shower spectra with regard to number of particles at observation height (3860 meters); energy spectra of electron-photon components; energy flux of electron-photon components; radial distribution of nuclear-active particles and their number in showers with various numbers of charged particles at observation level; energy and composition of active particles; radial distribution of μ-mesons and their number in extensive air showers with various numbers of charged particles; μ-meson energy spectra; radial distribution of Cerenkov radiation; energy expended by particles at observation level; and fluctuation of Cerenkov bursts. Pp. 73-92 deal with air-shower cores and high-energy nuclear-active particles with individual sections devoted to: core structure; high-energy nuclear-active particles; fluctuations in energy flux in air-shower cores; and primary cosmic radiation. Pp 92-107 deal with the development of nuclear-cascade avalanches in the atmosphere, with sections devoted to: the nuclear-cascade process and method of evaluating an avalanche; results of calculating shower characteristics (electron-photon component and nuclear-active component); and tracking high-energy particles. Two interpretations of phenomena corresponding to primary cosmic radiation in the 10^{14} to 10^{15} ev energy range are offered: 1) an attempt may be made to explain the change in characteristics of an extensive air shower with a total number of charged particles $N \approx 5^{10}$ by a change in the electrical spectrum and composition of primary cosmic radiation in the corresponding energy interval; 2) either a change

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L 27825-65

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ACCESSION NR: AT4049951

in or appearance of new auxiliary elementary processes during collision of $10^{14} - 10^{15}$ ev nucleons may be postulated. "Yu. Vavilov, O. Dovzhenko, I. Ivanovskaya, S. Nikol'skiy, Yu. Prokhorov, V. Sarantsev, Ye. Tukish, L. Billbin, L. Vasil'ev, V. Grishin, B. Zhurkin, V. Kologrivov, A. Kuznetsov, G. Ly*mar', Yu. Plotnikov, A. Smagin and V. Filonov participated in making the measurements in the Pamirs in 1952. The measurements in 1955 and 1957 were carried out by A. Ye. Chudakov, N.M. Nesterova, V.I. Zatsepin, P.V. Vakulov, Ye. I. Tukish, Yu. N. Konovalov and V.Ya. Markov (members of the FIAN), as well as Yu. D. Volkov, Yu. V. Galaktionov, V.L. Dadykin, A.S. Korolev, V.L. Makarevich and other students at Moscow State University. The Cerenkov radiation of extensive atmospheric showers at sea level was measured by members of FIAN and MGU under the guidance of V.I. Zatsepin. The energy of nuclear active particles was calculated by Ye. A. Murzina, while Ye. P. Yudin took part in the calculation of the A2 variant." Orig. art. has: 55 figures, 13 tables and 7 formulas.

ASSOCIATION: Fizicheskiy institut AN SSSR (Physics Institute, AN SSSR)

SUBMITTED: 00 ENCL: 00 SUB CODE: AA

NO REF SOV: 094 OTHER: 040

Card 3/3

ACC NR: AP6013492 UR/0120/66/000/002/0049/0050

AUTHOR: Golubnichiy, P.I.; Yakovlev, V.I.

ORG: Physical Institite, AN SSSR, Moscow (Fizicheskiy institut AN SSSR)

TITLE: A study of gas mixtures for the filling of spark chambers

SOURCE: Pribory i tekhnika eksperimenta, no.2, 1966, 49-50

TOPIC TAGS: cosmic ray, [illegible], spark chamber, spark chamber [illegible]

ABSTRACT: Mixtures of He - Xe; He - Ar; and Ar - Xe gases were studied for use in cosmic ray spark chambers controlled by a cosmic ray telescope. The telescope counters were arranged to activate trajectories passing in the uniform field region of the chamber. Chamber counting characteristics, and the high voltage impulse amplitude assuring 95% registration (puncture voltage) were recorded for various gas proportions. The Ar + Xe mixtures showed a sharp voltage drop at 95% Ar + 5% Xe. This was explained as the effect of additional ionization from metastable Ar - metastable Xe atom collisions and confirmed by the finding of a similar drop in 95% Ne + 5% He gas mixture, especially studied for this purpose. Of the gases investigated, Ne had the least puncture potential. The addition of 5% He to Ne drops the potential about 20%. For economy, the 25% Ne + 75% He mixture can be defended as it has the same puncture potential as pure Ne. However its effectiveness for cosmic ray bursts registration should be studied. Orig. art. has 3 figures.

SUB CODE: 18 SUBM DATE: 15Mar65 ORIG REF: 003 OTH REF: 001

Card 1/1 UDC: 539.1.072

L 32181-66 EWT(1)/EWP(m)/T-2 IJP(c)

ACC NR: AP6013917 SOURCE CODE: UR/0207/66/000/002/0014/0020

AUTHOR: Cherepanov, A. N. (Novosibirsk); Yakovlev, V. I. (Novosibirsk) 70 B

ORG: none

TITLE: A self-similar solution to the problem of expansion of a cylindrical column of conducting gas in a longitudinal magnetic field

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 2, 1966, 14-20

TOPIC TAGS: conducting gas, longitudinal magnetic field, magnetohydrodynamics

ABSTRACT: The authors study the unsteady radial motion of an infinite cylindrical column of conducting gas along a time-variable longitudinal magnetic field. The method of separating the variables was used for calculating the exact solution for a system of magnetohydrodynamic equations, assuming proportionality between the static pressure of the plasma on the boundary of the column and the external magnetic pressure. The energy characteristics of the interaction were calculated. Expressions are given for the effect of the magnetic Reynolds number on the ratio of the work done by the gas in an infinite time interval to the initial energy of the column. A physical model of this type may be interpreted as the expansion of a compressible conducting gas column in a nonconducting incompressible fluid located in a permeable infinite cylinder. In this case the requirement of proportionality between the static and magnetic pressures

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L 32181-66

ACC NR: AP6013917

reduces to the condition of a change in the external pressure at the boundary of the permeable cylinder according to a law which may be easily determined. Orig. art. has: 1 figure, 43 formulas.

SUB CODE: 20/ SUBM DATE: 27Oct65/ ORIG REF: 002

LS

Card 2/2

L 00542-66 EWT(m)/FCC/T IJP(c)

ACCESSION NR: AP5017950 UR/0367/65/001/006/1079/1092

AUTHOR: Murzina, Ye. A.; Nikol'skiy, S. I.; Tukish, Ye. I.; Yakovlev, V. I. 36 35 33

TITLE: Nuclear-active high-energy particles and the accompanying cosmic ray extensive air showers 19

SOURCE: Yadernaya fizika, v. 1, no. 6, 1965, 1079-1092

TOPIC TAGS: cosmic ray measurement, 9m cosmic radiation composition, cosmic ray shower, cosmic ray telescope, ionization hodoscope, spectrum analysis

ABSTRACT: The authors report the experimental results on the energy spectrum of nuclear-active particles in the region 3×10^{12} to 10^{14} eV at an elevation of 3860 m above sea level, and on the extensive air showers accompanying these particles. The apparatus is shown schematically in Fig. 1 of the Enclosure and consists of two trays of ionization chambers placed under a thick layer of carbon in a cavity surrounded by lead shielding. These chambers were used to detect the high-energy nuclear-active particles. Two additional trays of ionization chambers, under a relatively thin layer of lead, were placed above the carbon to measure the energy of the electron-photon component of the shower cord. The number of particles in the extensive showers was determined with hodoscopic counters placed both immediately above the block of ionization chambers and at a distance of about 30 meters from the

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L 00542-66
ACCESSION NR: AP5017950

center of the apparatus. The measured energy spectrum cannot be described by a power law with a single exponent over the entire energy range. The mean free paths were determined for absorption and for nucleon interaction in the atmosphere, and found to be 120 and 83 g/cm^2 respectively, for particle energies above 10^{13} eV. An analysis of the distribution of the total number of particles of extensive air showers accompanying nuclear-active particles of a given energy in the region $\geq 3 \times 10^{12}$ eV leads to the assumption that a change in the picture of the collision of a nucleon and the air nuclei takes place at an incident-nucleon energy above 10^{13} eV. This change explains the features of the photon energy spectrum in the upper atmosphere and the published data on extensive air showers with 10^4--10^6 particles. Although the spectra of the air showers could also be attributed to a sharp change in the composition of the primary cosmic radiation near 10^{13} eV, the latter assumption is not borne out by direct balloon and rocket data on the composition of the primary radiation. Orig. art. has: 9 figures, 31 formulas, and 3 tables.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute, Academy of Sciences, SSSR)

SUBMITTED: 02Sep64 ENCL: 01 SUB CODE: NP, GP

NR REF SOV: 010 OTHER: 006

Card 2/3

L 00542-66
ACCESSION NR: AP5017950 ENCLOSURE: 01

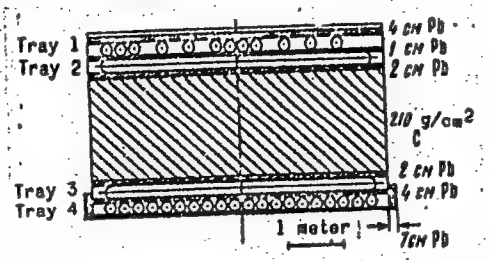

Fig. 1. Detector of nuclear-active particles and of electron-photon showers of high energy.

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3(7) SOV/50-59-7-12/20

AUTHOR: Yakovlev, V. I.

TITLE: Analytical Method for the Evaluation of Data in the Bearing of Drifting Automatic Radiometeorological Stations (Analiticheskiy sposob obrabotki dannykh pelengovaniya dreyfuyushchikh avtomaticheskikh radiometeorologicheskikh stantsiy)

PERIODICAL: Meteorologiya i gidrologiya, 1959, Nr 7, pp 41 - 42 (USSR)

ABSTRACT: For the systematic investigation of the drift of ice and marine currents, special drifting automatic radiotransmitting stations are used which periodically emit signals at times previously fixed. Models of such stations of 1956 are equipped with a meteorometer. These emit via radio the direction and velocity of the wind, the temperature, air pressure, etc. These stations with the meteorometers developed by the Arkticheskiy institut (Arctic Institute) are known by the name " DARMS Alekseyeva" (drifting automatic radiometeorological stations of Alekseyev). The bearing data are normally evaluated analytically. The method of evaluation recommended in the instruction (Ref 1) is too complicated and time-consuming. An analytical method of determining the geographic coordinates of a drifting automatic radiometeorological station by the parameters of two

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great circuits of the terrestrial globe is described here. This method simplifies considerably the task set. The method is illustrated and explained by use of figure 1. The distances between the direction-finder stations on the coast need not be calculated for this method, thus avoiding the corresponding errors. Computation is only done by logarithmic formulas, but no tables of logarithms are needed for the sums and differences. The solution of the problem only requires 25 operations. There are 1 figure and 1 Soviet reference.

YAKOVLEV, V. I.

"Pickup of a High-Speed Diesel With Turbocompressor Supercharging." Sub 18 Jun 51, Military Order of Lenin Academy of Armored and Mechanized Troops of the Soviet Army imeni I. V. Stalin

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 480, 9 May 55

GORBACHENKO, N.K.; YAKOVLEV, V.I.

Screen for observing ingot stripping from preheating furnaces.
Sbor.rats.predl.vnedr.v proizv. no.1:27 '61. (MIRA 14:7)

1. Konstantinovksiy metallurgicheskiy zavod.
(Furnaces, Heating)

PLATONOV, A. N., starshiy inzh.; YAKOVLEV, V. I., inzh.

RSL set for municipal and rural automatic telephone exchanges. Vest. sviazi 22 no.1:15-17 Ja '62. (MIRA 14:12)

1. Leningradskaya oblastnaya direktiya radiotranslyatsionnykh setey (for Platonov). 2. Vsevolozhskaya rayonnaya kontora svyazi (for Yakovlev).
(Telephone, Automatic)

ZHUKOV, V.D.; YAKOVLEV, V.I.; POTAPOVA, V.I.; AYUPOVA, Ye.O.; FRIDLYANDER, I.N., rukovoditel' raboty

Technology of production and the properties of semifinished products from the highly resistant B92 alloy. Alium. splavy no.3:92-104 '64. (MIRA 17:6)

MERSHALOV, A.F.; YAKOVLEV, V.I.

Efficient practices and types of bits in test drilling without coring. Razved. i okh. nedr 26 no.9:26-31 S '60. (MIRA 15:7)

1. Leningradskiy gornyy institut (for Mershalov). 2. Komi-Nenetskoye geolcgicheskoye upravleniye (for Yakovlev).
(Boring—Equipment and supplies)

L 5295-66 EWT(1)/EWA(j)/EWA(b)-2 JK
ACC NR: AP5025009 SOURCE CODE: UR/0286/65/000/016/0068/0069

AUTHORS: Belozerov, B. A.; Gorokhov, N. Ya.; Chernousov, N. I.; Yakovlev, V. I.

ORG: none

TITLE: A device for aerogenic immunization of people and farm animals by dry powdered vaccines. Class 30, No. 173892

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 16, 1965, 68-69

TOPIC TAGS: vaccine, immunization

ABSTRACT: This Author Certificate presents a device for aerogenic immunization of people and farm animals by dry powdered vaccines. The device contains a doser, a centrifugal rotary fan, and a remote control panel (see Fig. 1). To increase the accuracy and uniformity of dosing the amounts of the discharged dry vaccine, the device is provided with an immobile dosing disk and two rotary sector blades.

Card 1/2

UDC: 614.47-7:576.8.093.2

L 5295-66
ACC NR: AP5025009

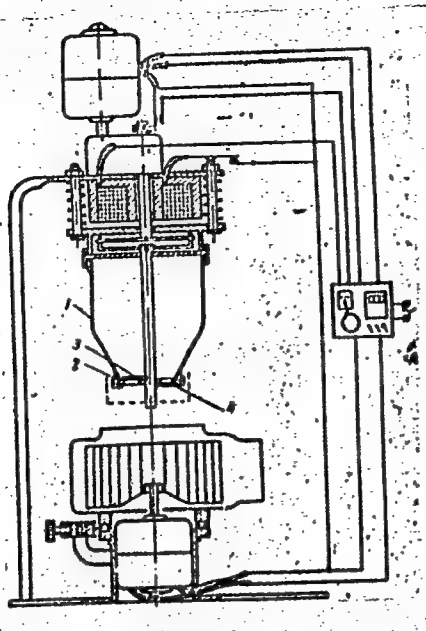

Fig. 1. 1- container; 2- immobile dosing disk; 3 and 4- rotary sector blades

Orig. art. has: 1 figure.
SUB CODE: LS/ SUBM DATE: 19Apr62/ ORIG REF: 000/ OTH REF: 000

Card 2/2

AKHLYNOV, I.Ya.; BASALAYEV, V.N.; DANILENKO, O.T.; ZAKHAROV, A.D.; OL'KHOVSKIY, V.Ye.; YAKOVLEV, V.I.; KUZ'MINA, V.S., red.

[Manual for navigators of fishing fleets; navigation of fishing boats and sea fishery practices] Spravochnik dudovoditelia rybolovnogo flota; promyslovaia navigatsiia i morskaia promyslovaia praktika. Moskva, Pishchevaia promyshlennost', 1965. 194 p. (MIRA 18:9)

1. Glavnoye upravleniye rybnoy promyshlennosti Azovo-Chernomorskogo basseyna (for Basalayev). 2. Polyarnyy nauchno-issledovatel'skiy institut rybnogo khozyaystva i okeanografii (for Danilenko). 3. Murmanskoye vyssheye morekhodnoye uchilishche (for Yakovlev). 4. Gosudarstvennaya inspektsiya bezopasnosti moreplavaniya i portovogo nadzora flota rybnoy promyshlennosti SSSR (for Zakharov).

DOLIVO-DOBROVOL'SKIY, L.B.; GLUSHKOVA, A.I.; KUZYANINA, T.N.;
EL'PINER, L.I.; YAKOVLEV, V.K.

Effect of biomycin and penicillin on the vital activity of some algae. Biul. MOIP. Otd. biol. 67 no.1:154-155 Ja-F '62.
(MIRA 15:3)

(ALGAE) (AUREOMYCIN) (PENICILLIN)

YAKOVLEV, V.L., inzh.

Drawing up an optimum supply plan for an ore dressing plant with the aid of electronic computers. Izv. vys. ucheb. zav.; gor. zhur. 8 no.2: 26-30 '65. (MIRA 18:5)

1. Institut gornogo dela Gosmetallurgkomiteta pri Gosplane SSSR.

VASIL'YEV, M.V., prof. doktor tekhn. nauk; YAKOVLEV, V.L., gornyy inzh.

Studying and selecting the optimal condition for mine haulage operations at the Sokolovka-Sarbay Combine with the aid of electronic computers. Gor. zhur. no.5:46-49 My '65. (MIRA 18:5)

1. Institut gornogo dela Gosudarstvennogo komiteta po chernoy i tsvetnoy metallurgii pri Gosplane SSSR, Sverdlovsk.

JVL.

2

981. Acceleration of shrinkage of vulcanising stock. P. S. Pushkin and V. M. Yakovlev. *Legk. Prom.*, 1957, 17, No. 3, 23–6. In order to accelerate the shrinkage of stock to be used in the automatic and semi-automatic production of soles and heels, it is proposed first to allow the stock to cool to 4 to 5°C for a short time and then heat the preliminarily cooling will accelerate the shrinkage effected by heating. A reduction of the time for shrinkage of raw stocks for porous parts of soles and heels to 10 to 14 min. from the previous 24 h. is quoted.

15283

YAKOVLEV, V.M.

AUTHORS: Vertsayzer, A. L., Yakovlev, V.M.,(Daugavpils = Dvinaburg) 103-19/10

TITLE: On Essential Shortcomings in the Terminology of Automatic Control Theory (O sushchestvennykh nedostatkakh v opredeleniyakh i terminologii avtomaticheskogo regulirovaniya)

PERIODICAL: Avtomatika i Telemekhanika, 1958, Vol. 19, Nr 1, pp. 95-98 (USSR)

ABSTRACT: In this paper, definitions and technical terms are given, which were extracted from textbooks published during the past 10 years and attention is diverted towards shortcomings, inconsistencies and contradictions. No conclusions are drawn, the problem is, however, submitted to discussion, with the hope that the authors of the publications referred to here will step forth. There are 8 figures, and 8 Slavic references.

AVAILABLE: Library of Congress

1. Automatic controls-Theory 2. Textbooks-Errors 3. Automatic controls-Terminology 4. Controls-USSR

Card 1/1

YAKOVLEV, V.M.

28(1) PHASE I BOOK EXPLOITATION SOV/2344

Vershinin, Nikolay Ivanovich, Anatoliy L'vovich Vertsayzer, and Vladimir Mikhaylovich Yakovlev

Avtomaticheskoye regulirovaniye (Automatic Regulation) Moscow, Gosenergoizdat, 1959. 127 p. (Series: Biblioteka po avtomatike, vyp. 3) 20,000 copies printed.

Ed.: K.V. Yegorov; Tech. Ed.: N.I. Borunov.

PURPOSE: This book is intended for engineering and technical personnel working in various branches of industry where automation is being introduced and who do not possess any special knowledge of automatic control.

COVERAGE: The book describes in popular form various types of automatic systems and gives their classification. Systems of automatic regulation as well as the principles and processes of regulation occurring in these systems are examined. There is a brief discussion of various types of automatic system elements and their characteristics. Problems of stability, quality of the regulating process and methods of improvement are analyzed. A large number of examples from various

Card 1/3

branches of industry is given. The terminology used in the book is based on a booklet published by the Committee on Technical Terminology, Academy of Sciences, USSR, issued in 1954 under the title "Terminologiya osnovnykh ponyatiy avtomatiki" (Terminology of Basic Concepts of Automatic Control). There is a reading list of 10 Soviet works on p. 128. No personalities are mentioned.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

Card 3/3

JP/gmp
10-24-59

LINDORF, L.S.; YAKOVLEV, V.M.

Starting a two-pole synchronous motor directly from the net. Prom.energ. 15 no.5:26-32 My '60. (MIRA 13:7)

(Electric motors, Synchronous)

YAKOVLEV, V.M.

Underground shock-producing blasting in seams subject to sudden outbursts of coal and gas. Ugol' 38 no.6:39-42 Je '63. (MIRA 16:8)

(Mine gases) (Blasting)

TARAN, A.G., inzh.; YAKOVLEV, V.M., inzh.; KREMENETSKIY, G.I., inzh.; RAYTHUB, M.S., inzh.; BOLOTSKIKH, N.S., inzh.

Hydraulic conveying of rocks used in drainage operations. Shakht. stroi. 7 no.3:23-24 Mr '63 (MIRA 17:7)

1. Ukrainskiy nauchno-issledovatel'skiy institut organizatsii i mekhanizatsii shakhtnogo stroitel'stva (for Taran, Bolotskikh).
2. SU No.2 tresta Dimitrovuglestroy (for Yakovlew).

YAKOVLEV, V. M. (Novosibirsk)

"On the self-oscillations of a weight on a moving conveyer line".

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 January - 5 February 1964.

VERSHININ, Nikolay Ivanovich; VERTSAYZER, Anatoliy L'vovich; YAKOVLEV, Vladimir Mikhaylovich; CHASHCHIN, A.V., red.

[Automatic control] Avtomaticheskii kontrol'. Moskva, Izd-vo "Energiia," 1964. 141 p. (Biblioteka po avtomatike, no.90) (MIRA 17:5)

VERSHININ, Nikolay Ivanovich; VERTSAYZER, Anatoliy L'vovich; YAKOVLEV, Vladimir Mikhaylovich; YEGOROV, K.V., red.

[Automatic control] Avtomaticheskoe regulirovanie. Izd.2., perer. i dop. Moskva, Energiia, 1965. 135 p. (MIRA 18:4)

SADEKOV, Mansur Makhmutovich, kand.ekonom. nauk; YAKOVLEV, Vasiliy Mikhaylovich; PRIVEZENTSEVA, A.G., red.; PRYTKOVA, R.N., tekhn. red.

[Statistics of retail prices in state and cooperative trade] Statistika roznichnykh tsen gosudarstvennoi i kooperativnoi torgovli. Moskva, Gosstatizdat TsSU SSSR, 1961. 93 p. (MIRA 15:2)

(Retail trade) (Prices)

YAKOVLEV, V.M. (Vorkuta)

Mining coal seams presenting a danger of outbursts in the Vorkuta deposit. Ugol' 39 no.3:59-62 My'64. (MIRA 17:5)

MOSIN, L.I.; YAKOVLEV, V.M.

Characteristics of the vectorcardiogram in elderly and senile people. Uch. zap. Stavr. gos. med. inst. 12: 428-429 '63. (MIRA 17:9)

1. Kafedra vnutrennikh bolezney stomatologicheskogo fakul'teta (zav. dotsent M.B. Rafalovich) Stavropol'skogo gosudarstvennogo meditsinskogo instituta.

MOSIN, L.M.; YAKOVLEV, V.M.

Gallop rhythm of the heart. Vrach. delo no.2:138-139 F'64
(MIRA 17:4)

1. Stavropol'skaya gorodskaya klinicheskaya bol'nitsa No.4 i kafedra fakul'tetskoy terapii (zav. - dotsent N.A. Mushev) Stavropol'skogo meditsinskogo instituta.

MOSIN, L.I.; YAKOVLEV, V.M.

Disorders of the function of irritability in various heart diseases. Sov. med. 28 no.4:24-29 Ap '64. (MIRA 17:12)

1. Stavropol'skaya gorodskaya klinicheskaya bol'nitsa No.4 (glavnyy vrach A.A. Tarasova).

MOSIN, L.I.; YAKOVLEV, V.M.

Disorders of conductivity in varicus heart diseases. Kaz. med. zhur. no.6:18-20 N-D '63. (MIRA 17:10)

1. Stavropol'skaya (na Kavkaze) gorodskaya klinicheskaya bol'nitsa No.4 (glavnyy vrach - A.A. Tarasova).

YAKOVLEV, V. N., Cand of Tech Sci -- (diss) "Investigation of the elements of impulse design on triode semiconductors." Kiev, 1957, 11 pp (Kiev Polytechnical Institute) (KL, 35-57, 107)

YAKOVLEV, V.N. PHASE I BOOK EXPLOITATION SOV/3890

Gerasymov, Sergey Mykhaylovych, Igor Mykolayevych Myhulin, and Vasyl' Mykolayevych Yakovlyev

Rozrakhunok napivprovidnykovykh pidsylyuvachiv i heneratoriv (Calculation of Semiconductor Amplifiers and Generators). Kyyiv, Derzhtekhvydav URSR, 1958. 287 p. 2,500 copies printed.

Ed.: Yu.Ye. Korsak; Tech. Ed.: R. Bezp'yatov.

PURPOSE: This monograph is intended for engineers and technicians working in the field of semiconductor devices, for students of radio engineering departments of schools of higher education, and for technically advanced radio amateurs.

COVERAGE: The book summarizes recent advances in design and use of semiconductors in solid-state electronics, mainly in amplifiers and generators. Methods of calculating semiconductor parameters relative to their application to particular devices are outlined and evaluated, and requirements according to type of operation are given. Chapters I and II were written by I.M. Myhulin; chapters III-V by S.M. Herasymov; chapters VI-VIII by

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V.M. Yakovlev, and chapters IX, X, and all appendixes were written collectively by all three authors. There are 36 references: 32 Soviet (2 of which are translations), 3 English, and 1 German.

TABLE OF CONTENTS:

YAKOVLEV, V.N.

Oscillators with linearly changing tension having a nonlinearity coefficient of zero. Nauch.dokl.vys.shkoly; radiotekh. i electron. no.2: 194-198 '58. (MIRA 12:1)
(Oscillators, Electron-tube)

9(4) SOV/142-58-6-12/20

AUTHOR: Yakovlev, V.N.

TITLE: An Analysis of Transistor Generators of Linearly Varying Voltage With Capacitive Feedback Coupling (Analiz poluprovodnikovykh generatorov lineyno izmenyayushchegosya napryazheniya s yëmkostnoy obratnoy svyaz'yu)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy - Radiotekhnika, 1958, Nr 6, pp 714-718 (USSR)

ABSTRACT: The article examines transistor equivalents of electron-tube generators of linearly varying voltage (LVV) with capacitive negative feedback coupling working under retarded conditions. The author first considers the general plan of the generator (Figure 1), consisting of an integrating network and amplifier, and computes the coefficient of non-linearity (CNL) of the circuit (eq 11,12). He states that frequency characteristics and sluggishness of the transistor will not be taken into account in his

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An Analysis of Transistor Generators of Linearly Varying Voltage With Capacitive Feedback Coupling

computations. A simple, practical circuit (Figure 2) is discussed, and its operation briefly described. Under given conditions, using P6V or P6G transistors, a CNL of about 2.5% is claimed. In order to reduce this figure, and, as well, the recovery time of the circuit, a "compound triode" set-up is recommended (Figure 3), assuring a CNL of less than 1%. Series connection of two transistor triodes is recommended (Figure 5) for increased LVV signal amplitude. The author suggests that one of these two triodes should be a compound unit (above) in order to keep the CNL and recovery time down. Finally the author recommends the order of computation of the circuit parameters for an LVV generator with a single or series connected triodes. Experiments using a P6G triode unit have shown the circuits to be highly effecient, especially utilizing the compound triode set-up. Circuit parameters for

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the experiments are listed. CNL was less than 2% with the compound triode unit. Changing of triode units had no noticeable effect on efficiency, except in the series connected circuit (Figure 5). It is possible to maintain voltage linearity over a wide range of temperatures. This article was recommended by the Kafedra radioperedayushchikh ustroystv Kiyevskogo ordena Lenina politekhnicheskogo institut[illegible] (Chair of Radio-Transmitting Equipment of the Kiyev order of Lenin Polytechnic Institute). There are 5 circuit diagrams, and 3 references, 2 of which are Soviet and 1 English.

SUBMITTED: June 9, 1958

YAKovlev, V. N.

109-1-7/18

AUTHOR: Yakovlev, V.N.

TITLE: Relaxation Oscillators Employing Point-Contact Transistors. (Relaksatsionnyye generatory na tochechnykh poluprovodnikovykh triodakh)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol.III, Nr 1, pp.61-73 (USSR)

ABSTRACT: The most common transistor relaxation oscillator is based on the circuit employing a capacitance in the emitter of the transistor. It is possible, however, to design the oscillators with a capacitance in the collector, an inductance in the base or a capacitance in the emitter-collector circuit of the transistor. The paper is mainly concerned with the analysis of these three oscillators. The analysis is based on a graphical-analytical method. The voltage current characteristic of a bipole with a point-contact transistor is constructed graphically by employing the static output characteristics and the feedback characteristics of the system. The resulting characteristic is then approximated by a broken straight line, that is, by a number of straight line segments. The parameters of each segment of the voltage current characteristic are then determined and the bipole is represented by means of an equivalent generator whose

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e.m.f. and output impedance are constant for a given region of the characteristic and change abruptly during the transition into another region. Analysis of such simple equivalent circuits leads to comparatively simple formulae for the pulse parameters of the system. During the analysis of the conditions necessary for the oscillation it is possible to use the r-type parameters of the transistor which can be defined for the AC components by means of Eqs.(1) and (2) and whose meaning can be understood with reference to Fig.1. The oscillator with an emitter-collector capacitance is shown in Fig.1a, and the waveforms generated by it are illustrated in Fig.1b. The approximated emitter-collector characteristic of this system is shown in Fig.4 and the equivalent circuit for the charging of the capacitor C is given in Fig.5. From the analysis of the circuit of Fig.5, based on the approximation of Fig.4, it is found that the duration of the pulses at the collector is given by:

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$$t_u = CR_p \ln \frac{U_3 - |U_1|}{U_2 - |U_1|} \quad , \tag{11}$$

and the period of the oscillation is expressed by:

$$T = C \frac{RR_3}{R + R_3} \ln \frac{U_4 R - U_2(R_3 + R)}{U_4 R - U_3(R_3 + R)} \quad , \tag{12}$$

where U_1 , U_2 and U_4 are the voltages as indicated in Fig.4, R_p is the slope of the characteristic of Fig.4 in the segment 1' to 2' and R_3 is the slope of the characteristic in the region 1 to 2". Also an expression for the pulse amplitude is found (see Eq.(14)) and the conditions of oscillations are investigated (see Eq.(19)). Similar analysis is carried out for the relaxation oscillator shown in Fig.7, in which the capacitance is connected in the collector circuit. The characteristic of the circuit is

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approximated as shown in Fig.10 and the equivalent circuits for the capacitor charging and discharging are given in Figs.11 and 12. On the basis of the two circuits it is found that the charging time of the capacitor can be expressed by Eq.(21) and the discharge time by Eq.(22) where the resistances R_K^I and R_K^{III} are equal to the slopes of the characteristic of Fig.10 in regions I and III, voltages U_1, U_2 and U_3 are also defined by Fig.10. An oscillator with an inductance in the base is shown in Fig.13 and its current voltage characteristic is represented in Fig.14. Analysis of this system shows that the pulse duration is expressed by Eq.(26) and the interval between the pulses is given by Eq.(27), where R_0^I and R_0^{III} correspond to the slopes of the approximating curve of Fig.14. An expression for the rise time of the pulse in a relaxation oscillator is derived and it is shown that this is given by:

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Relaxation Oscillators Employing Point-Contact Transistors

$$t_{\Phi} \approx \frac{qE_k}{\pi kTf_{kp}} \frac{1}{r_{11} - r_{12}} \frac{r_{11}}{\alpha - 1 - \frac{r_{11} - R_k}{r_{22}}} \qquad (45)$$

where r_{11}, r_{12} and r_{22} are the r type parameters of the transistor, f_{kp} is the cut-off frequency and E_k and R_k are the collector supply voltage and resistance respectively. There are 16 figures and 9 references, 7 of which are Russian and 2 English.

SUBMITTED: March 9, 1957

AVAILABLE: Library of Congress

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SOV/109-3-9-6/20

AUTHOR: Yakovlev, V. N.

TITLE: Calculation of the Duration of the Pulse of a Blocking Oscillator Based on a Junction Transistor (K raschetu dlitel'nosti impul'sa bloking-generatora na ploskostnom triode)

PERIODICAL: Radiotekhnika i elektronika, 1958, Vol 3, Nr 9, pp 1167-1171 (USSR)

ABSTRACT: Senatorov and Berestovskiy derived an expression (see Ref.1) for the duration of the pulse in a blocking oscillator. However, since in their work it was assumed that the pulse is completed when the base current is approximately zero, their formula is burdened with an error of the order of 50 to 75%. Here, an attempt is made to derive a more accurate expression. In order to understand the procedure adopted it is, however, necessary to refer to the paper by Senatorov and Berestovskiy, and in particular to the Figs. 7 and 12 of their paper. It is assumed (Ref.1) that the charge on the condenser of the blocking oscillator is given

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Calculation of the Duration of the Pulse of a Blocking Oscillator Based on a Junction Transistor

by Eq.(1) so that the voltage across the condenser is given by Eq.(2), where i_o is defined by Eq.(3), in which n is the transformation ratio of the transformer used in the oscillator. It is assumed that the pulse is terminated when the base current has a value I_{oN} which is expressed by Eq.(5). From this the pulse duration is given by:

$$t_p = \frac{\text{arc cos} \frac{nRI_{oN}\cos\varphi}{E_k} - \varphi}{\omega} \qquad (6)$$

The main quantity to be determined in Eq.(6) is the base current I_{oN}. For this purpose an amplifying stage, as shown in Fig.2, is considered. The quantity I_{oN} is found from the condition that the amplification of the stage should be greater than unity. This leads to:

$$h_{21} > n \qquad (10)$$

Calculation of the Duration of the Pulse of a Blocking Oscillator Based on a Junction Transistor

The quantity h_{21} (which is defined by Eq.(8)) can be plotted as a function of the base current (see Fig.3); this curve is used to determine I_{oN} . By employing the above procedure it is possible to determine the pulse duration with an error of 10 to 15%. The accuracy of the method is illustrated by Fig.4, where curve 1 was taken experimentally while curve 2 was calculated. The paper contains 4 figures and 2 Soviet references.

SUBMITTED: January 12, 1957.

9 (2, 3) SOV/162-59-1-22/27

AUTHOR: Yakovlev, V.N.

TITLE: A Transistorized Oscillator With Combined Feedback Producing Linearly Changing Voltage

PERIODICAL: Nauchnyye doklady vysshey shkoly, Radiotekhnika, i elektronika, 1959, Nr 1, pp 188-192

ABSTRACT: The author examines a transistorized oscillator producing a linearly changing voltage of great linearity. The oscillator has capacitive negative feedback and positive feedback, achieved by using an emitter follower. Formulas and the order of calculating such an oscillator are given. In a previous paper [Ref 1], the author showed the possibility of building a vacuum tube oscillator producing linearly changing voltage with a nonlinearity factor of zero. The low input impedance and the specific operating conditions of transistors necessitate a special examination of a transistorized oscillator producing linearly changing voltage with a nonlinearity factor of zero. In

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A Transistorized Oscillator With Combined Feedback Producing Linearly Changing Voltage

distinction of the designation used in [Ref 1], this oscillator is called "oscillator with combined feedback". The general circuit diagram of the oscillator is shown in Fig 1. The practical application of the general circuit diagram is shown in circuit diagram Fig 2. Two transistors and one diode are used. The experimental investigation showed the high efficiency of the transistorized oscillator described in this paper. There are 2 circuit diagrams and 1 Russian reference.

SUBMITTED: June 6, 1958

YAKOVLEV, V.N.

Investigation of possible transistor blocking oscillators.
Izv. vys. ucheb. zav.; radiotekh. 2 no.6:720-728 N-D '59.
(MIRA 13:6)

1. Rekomendovana kafedroy radioperedayushchikh ustroystv Kiyevskogo ordena Lenina politekhnicheskogo instituta.
(Oscillators, Electric) (Transistors)

AUTHOR: Yakovlev, V.N. SOV/109-4-1-10/30

TITLE: Conditions of the Appearance of Avalanche Processes in Relaxation Oscillators, Based on Point-contact Transistors (K voprosu ob usloviyakh vozniknoveniya lavinoobraznykh protsessov v relaksatsionnykh generatorakh na tochechnykh poluprovodnikovykh triodakh)

PERIODICAL: Radiotekhnika i Elektronika, 1959, Vol 4, Nr 1, pp 70 - 74 (USSR)

ABSTRACT: The relaxation oscillators based on point-contact transistors can be considered as the devices which contain a non-linear active bipole. The current-voltage characteristic of such a bipole can be either of S-type or of the N-type (see Figures 1). It is more convenient, however, to regard such systems as the devices comprising a non-linear current or voltage amplifier. This approach is advantageous in that it is simple and it is comprehensible physically. First, a relaxation oscillator containing a capacitance is considered; this is shon in Figure 2a. Here, the amplifier is symbolically represented by a quadrupole having input terminals $a_1 b_1$ and output terminals

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a_2b_2 ; the capacitances C_1 and C_2 of the circuit represent the input and output capacitances of the amplifier. If, during the avalanche process, $i_R \ll i_C$, the voltage across C_1 is described by:

$$C_o \frac{d^2u_1}{dt^2} = \gamma \frac{du_1}{dt} - \frac{u_1}{CR_{BX}R_{Bb1X}} \qquad (1)$$

where C_o is given by Eq (2), while γ is expressed by Eq (3). R_{BX} is the input impedance of the amplifier, R_{Bb1X} is the output impedance of an equivalent generator $K_u'u_1$ (see Figure 2); K_u' is the gain of the amplifier under the open-circuit conditions. If the capacitance C is large, Eq (1) can be written as Eq (4), from which it follows that the avalanche process can take place when

$\gamma > 0$. From this, in turn, it follows that the condition of the avalanche process is that K_u should be greater than unity; here K_u denotes the low-frequency voltage gain of the amplifier. The general circuit of a relaxation oscillator with an inductance is shown in Figures 3. The operation of the circuit can be described by Eq (7) where ξ is defined by Eq (8). K_i' denotes the current gain of the amplifier (under the short-circuit condition). If the inductance of the oscillator is comparatively large, Eq (7) can be written as Eq (9). From this, it is found that the avalanche process will take place when $\xi > 0$. This condition is equivalent to $K_i > 1$, where K_i denotes the low-frequency current gain of the amplifier. Three different capacitive relaxation oscillators are shown in Figures 4, 5 and 6 and an inductive relaxation oscillator is shown in Figure 7. The voltage gain

Conditions of the Appearance of Avalanche Processes in Relaxation Oscillators, Based on Point-contact Transistors

coefficients (or current gains) in these circuits are given in the table on p 74.
There are 7 figures, 1 table and 3 Soviet references.

SUBMITTED: December 20, 1956

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YAKOVLEV V.N.
p.2.

SOV/125-59-5-13/16

18(5,7), 25(5)
AUTHOR: None Given

TITLE: Scientific-Technical Conference on Questions of Welding Engineering

PERIODICAL: Avtomaticheskaya svarka, 1959, Vol 12, Nr 5 (74) pp 95-96 (USSR)

ABSTRACT: The scientific-technical conference on question of welding engineering convened in Khar'kov from March 11- 13, 1959. The following organizations convened in the conference: The Scientific-Technical State Committee of the Council of Ministers of the UkrSSR, the Khar'kov Sovnarkhoz, the Institute of Electric Welding imeni Ye.O. Patona of the Academy of Sciences of the UkrSSR, the Kiyev and Khar'kov oblast administrative NTO of the machine industry. After the introduction of the Chairman of GNTK UkrSSR, G.F. Kostenko, the conference heard the report of Academician AS UkrSSR, B.Ye. Paton "On the Reintroduction and production of Welding Engineering". After that, the following reports were heard at the conference: Member of Gos Plan UkrSSR

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Scientific-Technical Conference on Questions of Welding Engineering

D.I. Polyakov on establishing materials and engineering bases in the republic for the development of welding. Vice Chairman of Sovnarkhoz V.N. Yakovlev on the introduction of welding engineering in the enterprises of the Dnepropetrovsk economic administrative area. Chief of Technical Administration of the Khar'kov Sovnarkhoz I.I. Kuzubov on the introduction of progressive welding engineering in the enterprises of the Sovnarkhoz, Comrade Ratnikov on successes of the Zaporozh'ye Metal Construction Factory in introducing welding engineering. Candidate of Technical Sciences I.I. Frumin (Institute of Electric Welding imeni Ye. O. Paton) on new works on automatic welding. Chief of Welding Department of the Novo-Kramatorskiy Mashine Factory V.K. Yeremenko on the use of "electric Slag" welding in heavy machine building. Candidate of Technical Sciences Yu. A. Yuzvenko spoke on ceramic flux for welding. Chief of Welding Department of Khar'kov Turbine Factory, S.I. German on the use of radioelectric welding in carbon dioxide. Candi-

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date of Technical Sciences P.I. Sevbo on new equipment for welding, worked out by the Institute of Electric Welding imeniYe.O. Paton. Candidate of Technical Sciences V.K. Lebedev (Institute of Electric Welding imeniYe.O. Paton) on new works on point-welding. Engineer L.V. Zaychik on new welding equipment, worked out by VNIIESO. Vice Director of the Institute of VNII Avtogen, Candidate of Technical Sciences I.A. Antonov on recent achievements in the gas flame treatment of metals. Candidate of Technical Sciences N.F. Kazakov (Chair of Technology of Metals at Moscow Institute of the Meat and Milk Production) on a new method of vacuum diffusion welding.

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Yakovlev V.N.

PHASE I BOOK EXPLOITATION SOV/4034

Poluprovodnikovyye pribory i ikh primeneniye; sbornik statey, vyp. 4. (Semiconductor Devices and Their Application; Collection of Articles, No. 4) Moscow, Izd-vo "Sovetskoye radio," 1960. 421 p. Errata slip inserted. No. of copies printed not given.

Ed. (Title page): Ya. A. Fedotov; Ed. (Inside book): I. M. Volkova; Tech. Ed.: A. A. Sveshnikov; Editorial Board: Ya. A. Fedotov (Resp. Ed.), N. A. Barkanov, L. G. Bergel'son, A. M. Broyde, Ye. I. Gal'perin (Deputy Resp. Ed.), Yu. A. Kamenetskiy, S. F. Kausov, A. V. Krasilov, A. A. Filikovskiy, L. F. Nikolayevskiy, N. A. Penin, and I. P. Stepanenko.

PURPOSE: This collection of articles is for technicians and scientists working in the field of semiconductors.

COVERAGE: These articles cover the following problems: physical processes occurring in semiconductor diodes and transistors; transistor parameters, and methods and instruments for measuring them; special features of transistor operation in amplifying and oscillating circuits; and circuits and systems utilizing transistors. Several articles mention personalities. References accompany most articles.

AVAILABLE: Library of Congress

S/142/60/003/005/010/015
E192/E382

9.2560

AUTHOR: Yakovlev, V.N.

TITLE: A Semiconductor Generator of Linearly Changing Voltages

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiotekhnika, 1960, Vol. 3, No. 5, pp. 509 - 514

TEXT: A generator of linearly changing voltages based on two transistors and a diode is described. The basic diagram of the system is illustrated in Fig. 1 and some of its relevant waveforms are shown in Fig. 2. The system can operate either as an oscillator or a monostable circuit. Only the monostable operating conditions are considered. In the absence of the trigger pulses (which are normally applied to the collector or the base of the transistor ΠT_1) the transistor ΠT_2 is conducting. Due to the presence of the resistance r and the conducting state of the diode D, the base potential ΠT_1 is higher than the base potential of ΠT_2 and so ΠT_1 is closed. The capacitor C is charged to its maximum

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potential. During the action of the triggering pulse the transistor ΠT_1 is open and this results in the increase of the potential of the base and emitter of ΠT_2. The potential of the collector of ΠT_2 now falls rapidly (instant T_1 in Fig. 2), the diode is closed due to the presence of the divider $R_1 R_2$ and the capacitor is not affected. The negative feedback provided by the collector-base capacitance C stabilises the discharging current for the capacitor which is terminated at the instant when the diode becomes closed. The latter becomes open due to the reduction in the base potential of ΠT_1 and the increase in the collector potential of ΠT_2 (interval from $t_1 - t_2$ in Fig. 2). The capacitor C is now charged, resulting in an increase in the base current of ΠT_2 and a reduction in the emitter potentials of the

A Semiconductor Generator ....

transistors. This results in the closing of T_1 and the generator returns to its original state. When the resistance $R_э$ is suitably reduced the generator becomes an oscillator. The nonlinearity coefficient ε of the generated waveform can be described by (Ref. 4 - the author - Izv. vuzov SSSR - Radiotekhnika, 1958, Vol. 1, No. 6, 714):

$$\varepsilon = \xi \frac{R + R_{вх}}{(K_0 + 1) R_{вх}} \approx \xi \frac{1 + g_{вх} R}{K_0}, \qquad (1) .$$

In the above, the conductance $g_{вх}$ and the coefficient K_0 denote the input conductance of the amplifier of the system and its gain, provided the resistances r and $R_э$ are taken into account. If $R_э \ll R_{K_1}$ and $R_1 + R_2 \gg R_{K_2}$, the above parameters can be expressed as:

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$$g_{ex} = \frac{\frac{1}{r + h_{11_1}} + \frac{1}{h_{11_2}}}{1 + R_e \left[\frac{h_{21_1}}{(r + h_{11_1})(1 + h_{22_1} R_{K_1})} + \frac{h_{21_2}}{h_{11_2}(1 + h_{22_2} R_{K_2})} \right]} ; \quad (2).$$

$$K_0 = \frac{h_{21_1} R_{K_1}}{(h_{11_1} + r)(1 + h_{22_1} R_{K_1}) \left[1 + \frac{h_{21_2} R_e}{h_{11_2}(1 + h_{22_2} R_{K_2})} \right] + h_{21_1} R_e} \quad (3) .$$

In the derivation of these equations it was also assumed that $k_o \gg 1$ and $h_{21} \gg 1$. On the other hand, if it is assumed that $h_{22} R_K \ll 1$ and $h_{21} R_3 \gg h_{11}$, Eq. (1) can be written as:

$$\varepsilon = \xi \frac{R(h_{11_1} + h_{11_2} + r) + R_e [h_{21_1} h_{11_2} + h_{21_2}(h_{11_1} + r)]}{h_{21_1} h_{11_2} R_{K_1}} \quad (4) ,$$

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from which it can be seen that the maximum nonlinearity coefficient is of the order of 5-7%. In practice, the maximum value of the coefficient ξ for the oscillator is 0.5 - 0.75. The discharge time for the condenser is given by:

$$t_{раз} \approx \xi RC \qquad (5)$$

and the recovery time for the generator, if operating as a monostable circuit, is expressed by:

$$t_{BOC} = (3 - 5)C(R_{K_1} + R_э) \approx (3 - 5)CR_{K_1} \qquad (6) .$$

For the design of the system it is necessary to determine the cut-off conditions for ΠT_1; these are given by:

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$$r\left(E_K \frac{R_3}{R_{K_2} R_2} - I_{KO}\right) \approx (0.5 - 1)V \qquad (7) .$$

The transistor T_2 should be in the saturation condition and this is fulfilled when:

$$R \leq h_{21_2} R_{K_2} \qquad (8) .$$

In order that the non-conducting period for the diode be sufficient for the complete discharge of the condenser it has to meet the following condition:

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A Semiconductor Generator ....

$$U_{K_2} \geq U_3 (R_1/R_2) \qquad (9)$$

where U_{K_2} and U_3 are the voltages across the collector-emitter of T_2 and the resistance R_3 at the end of the condenser discharge. The magnitude of U_3 can be determined from:

$$U_3 = R_3 i = E_K R_3 \left(\frac{1}{R_{K_2}} + \frac{1}{R} + \frac{1}{R_{K_1}} \right) \qquad (10) .$$

On the basis of the above formulae, it is possible to design a generator for the following given parameters: ε; t_{pa} and t_{BOC}. A numerical example illustrating the use of the design formulae is given. The author expresses his gratitude

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A Semiconductor Generator ....

to Engineer N.P. Stepanushkin for conducting the measurements (on the generator which was designed by means of the formulae). There are 4 figures and 4 references: 3 Soviet and 1 non-Soviet. The English-language reference quoted is: Ref. 1 - K.P. Nambiar and A.R. Boothroyd - PIEE, part B, 1957, 104, No. 15, 293.

ASSOCIATION: Kafedra radioperedayushchikh ustroystv Kiyevskogo ordena Lenina politekhnicheskogo instituta
(Chair of Radio-transmitting Devices of the Kiyev "Order of Lenin" Polytechnical Institute)

SUBMITTED: February 10, 1960 (initially)
March 21, 1960 (after revision)

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YAKOVLEV, V.N.

PHASE I BOOK EXPLOITATION SOV/5586

Gerasimov, Sergey Mikhaylovich, Igor' Nikolayevich Migulin, and Vasiliy Nikolayevich Yakovlev

Raschet poluprovodnikovykh usiliteley i generatorov (Design of Semiconductor Amplifiers and Generators) 2d ed., rev. and enl. Kiyev, Gostekhizdat UkrSSR, 1961. 430 p. 25,000 copies printed.

Ed.: Yu. Ye. Korsak; Tech. Ed.: S.M. Matusevich.

PURPOSE: This book is intended for engineering and technical personnel concerned with the application of semiconductor devices. It may also be useful to students of radio engineering divisions in schools of higher education and to advanced radio amateurs.

COVERAGE: The book discusses calculation principles of transistorized amplifiers, generators, and pulse circuits. Chs. I,II, III, and XII were written by I.N. Migulin; Chs. IV, V, and VI by S.M. Gerasimov; Chs. VII, VIII, IX, X, and XI by V.N. Yakovlev. References to each chapter are listed separately in the Bibliography. There are 43 references: 37 Soviet and 6 English.

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YAKOVLEV, V.N.

Study of transistorized pulse generators with delayed feedback.
Radiotekh. i elektron. 6 no.10:1770-1773 O '61. (MIRA 14:9)
(Pulse techniques (Electronics)) (Oscillators, Transistor)

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S/109/61/006/012/003/020
D246/D305

16.8000 (1103, 1329, 1132)

AUTHOR: Yakovlev, V.N.

TITLE: Applying the method of slowly-varying parameters for the investigation of non-linear auto-oscillating systems with delay

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 12, 1961, 1974 - 1981

TEXT: In this work the author investigates the non-linear differential-difference equation of the generator, obtained by taking into accout the real volt-ampere characteristics of the non-linear element. He uses the method of slowly varying parameters (Van der Pol method), which is applicable to systems, nearly linearly conservative. The equation describing the non-linear self-oscillating system with delay is the following:

$$\ddot{u}(t) + 2\delta\dot{u}(t) - 2q\dot{u}(t-\tau) + \omega_0^2 u(t) = \mu f[u(t), \dot{u}(t), u(t-\tau), \dot{u}(t-\tau)], \quad (1)$$

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where τ - time of dealy, $\mu > 0$ - a non-dimensional quantity, much less than unity. First the author seeks a solution of the left hand side equation ($\mu = 0$), which contains all the linear parts of the system, with or without delay. This is done by the method of harmonic linearization of Krylov and Bogolyubov. The general solution of the reduced equation is obtained by the Schmidt theorem

$$u(t) = \sum_{n=1}^{i} A_n \cos \varphi_n \qquad (13)$$

where $\varphi_m = \omega_a t + \theta_n$. The reduced equation can be written:

$$\ddot{u}(t) + \frac{2\delta - 2q\cos\omega\tau}{1 + \frac{2q}{\omega}\sin\omega\tau}\dot{u}(t) + \frac{\omega_0^2}{1 + \frac{2q}{\omega}\sin\omega\tau}u(t) = 0. \qquad (7)$$

which describes a system on the border of stability, with non-attenuating periodic oscillations. Now the full equation can be written as a combination of (1) and (7):

$$\ddot{u}(t) + \omega^2 u(t) = \mu F[u(t), \dot{u}(t), u(t-\tau), \dot{u}(t-\tau) \qquad (14)$$

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and one determines u(t, u) as a solution of this equation. As in practice the non-linear systems with delay show only one frequency oscillation with maximum amplitude, so the solution will be sought in the form

$$u(t) = A \cos \Psi = A \cos(\omega t + \theta) \qquad (17)$$

where A and θ will be certain functions of time. These can be shown to be slowly changing functions of time. On this basis the author obtains solutions for them:

$$\dot{A}(t) = -\frac{\mu}{2\pi\omega}\int_0^{2\pi} F[A\cos\psi, -\omega A\sin\psi, A\cos(\psi-\omega\tau), -\omega A\sin(\psi-\omega\tau)]\sin\psi\, d\psi, \qquad (24)$$

and

$$\dot{\theta}(t) = \omega - \frac{\mu}{2\pi\omega A}\int_0^{2\pi} F[A\cos\varphi, -\omega A\sin\psi, A\cos(\psi-\omega\tau), -\omega A\sin(\psi-\omega\tau)]\cos\psi\, d\psi. \qquad (25)$$

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Applying the method of slowly - ...

From these, one can obtain approximate values for the amplitude and phase of the oscillations. As an example of the application of the method, the author analyzes an autogenerator with contour in the grid circuit of the valve and with a delay line. The system of equations

$$C\ddot{u} + i_L + i = 0, \qquad (26)$$
$$L\dot{i}_L + ri_L = u - M\dot{i}_a,$$
$$i_a = S(u_g)\,u_g,$$

is given. Following his method, the author gets the following expressions for amplitude and frequency:

$$A_y = 2\left[\frac{S_0 M\cos\omega\tau - \left(\frac{L}{\rho} + rC\right)}{S_2 M\cos\omega\tau\left(1 + \frac{\omega_0^2 S_0 M}{\omega}\sin\omega\tau\right)}\right]^{1/4}. \qquad (37)$$

$$\omega_y = \omega + \frac{\mu A_y^2\omega_0 S_3}{8S_0}\sin\omega\tau = \omega + \frac{\omega_0^2\sin\omega\tau\left[S_0 M\cos\omega\tau - \left(\frac{L}{\rho} + rC\right)\right]}{2\cos\omega\tau\left(1 + \frac{\omega_0^2 S_0 M}{\omega}\sin\omega\tau\right)}. \qquad (38)$$

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where $\mu = S_0 M \omega_0$. Hence the non-linear correction to the frequency is proportional to μ. It is greater, the stronger the inequality

$$S_0 M \cos \omega\tau > \frac{L}{\rho} + rC \qquad (29)$$

which is the condition for the self-excitation of the generator. There are 5 figures and 11 references: 8 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publications read as follows: C.C. Cutler, The regenerative pulse generator, Prov. I.R.E., 1955, 43, 2, 140; N. Minorskiy, Self-excited oscillations in dynamical systems possessing retarded actions, Trans. ASME, 1942 64, 1,65; V. Met, On multimode oscillators with constant time delay. Proc. I.R.E., 1957, 45, 8, 1119.

SUBMITTED: January 11, 1961

Card 5/5

GERASIMOV, S.M.; MIGULIN, I.N.; YAKOVLEV, V.N.; MASHAROVA, V.G., red.; BELYAYEVA, V.V., tekhn. red.

[Fundamentals of the theory and design of transistor circuits] Osnovy teorii i rascheta tranzistornykh skhem. Moskva, Izd-vo "Sovetskoe radio," 1963. 663 p. (MIRA 16:10)

(Transistor circuits)

YAKOVLEV, V.N.

Response to letters written to the editor by A.D.Gladun, P.A. Perepeliatnik, and the study group of the Department of the Theory of Oscillations at Moscow University. Radiotekh.i elektron. 8 no.2:357-358 F '63. (MIRA 16:2)
(Automatic control) (Oscillations)

SERVINSKIY, Yevgeniy Grigor'yevich, kand. tekhn.nauk; YAKOVLEV, V.N., kand. tekhn. nauk; TKACHENKO, L.N., inzh., red.

[Frequency control of quartz self-oscillators] Upravlenie chastotoi kvartsevykh avtogeneratorov. Kiev, Tekhnika, 1964. 200 p. (MIRA 17:10)

L 17539-66 EWT(1)/EWA(h)
ACC NR: AP6001943 SOURCE CODE: UR/0142/65/008/006/0736/0738

AUTHOR: Yakovlev, V. N.; Sinel'nikov, I. S.

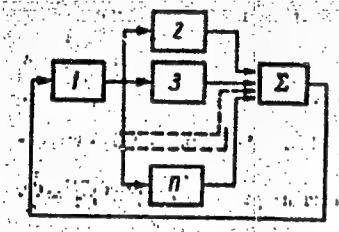
ORG: none

TITLE: Resistive-capacitive FM oscillators with multiloop feedback

SOURCE: IVUZ. Radiotekhnika, v. 8, no. 6, 1965, 736-738

TOPIC TAGS: FM oscillator, oscillator feedback

ABSTRACT: The spurious AM has been one of the principal shortcomings of modern RC FM-oscillators; a frequency deviation of 50% with a negligible AM has been very difficult to achieve. Hence, the use of RC FM-oscillators having a number of parallel selective RC feedback circuits is suggested. Such an oscillator (see figure) comprises amplifier 1, RC-circuits 2, 3, ..., n, and summation device Σ. Simple formulas for calculating such an RC oscillator are developed. Experiments with a 2-feedback-loop oscillator exhibited the possibility of obtaining a 50% frequency deviation with only about 2% spurious AM. Orig. art. has: 3 figures and 11 formulas.



FM oscillator with multiloop feedback

SUB CODE: 09 / SUBM DATE: 05May65 / ORIG REF: 002

Card 1/1

UDC: 621.373.421.15

L 34852-66 EWT(1)
ACC NR: AP6015149 SOURCE CODE: UR/0142/66/009/002/0214/0223

AUTHOR: Yakovlev, V. N.; Butrimenko, F. N.

ORG: none

TITLE: Repetition frequency dividers with square timing voltage

SOURCE: IVUZ. Radiotekhnika, v. 9, no. 2, 1966, 214-223

TOPIC TAGS: frequency divider, repetition frequency divider, frequency division

ABSTRACT: Heretofore, repetition frequency dividers have had a rather low division ratio (10—15 tube types, 5—10 transistorized), and a low division-ratio stability caused by the exponential shape of the timing voltage and ambient-temperature variations. A new repetition-frequency divider is suggested in which the timing voltage is combined from a synchronized-generator voltage and a pulse-generator voltage; the resulting voltage is much closer to the perfect rectangular

Card 1/2 UDC: 621.374.44

ACC NR: AT6014783

of the system are self-oscillations in the neighborhood of the maximum. Using z-transforms, the dynamic behavior of the system is described by a (n + 1)-th order difference equation, which is transformed to a system of first-order equations in standard form. These equations describe a piece-wise affine mapping of the phase-space into itself. There is a switching hyperplane separating the half-spaces with positive and negative step width. Simple oscillations of period 2 l T (l integer, T sampling period) are given in closed form. The necessary and sufficient existance conditions of these oscillations take the form of l inequalities, into which only the values of the z-transfer function of the linear unit in points of the unit circle enter. In second-order systems there are always oscillations with periods 4 T and 6 T, whereas oscillations with longer periods can exist only if the dynamic lag of the plant is large enough. All these oscillations are stable. Orig. art. has: 4 figures and 80 formulas. [Authors's abstract.] [KS]

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 001/ OTH REF: 003/ SOV REF: 007

Card 2/2

L 29199-66 EWT(1)

ACC NR: AP6008294 SOURCE CODE: UR/0109/66/011/003/0539/0544

AUTHOR: Yakovlev, V. N.

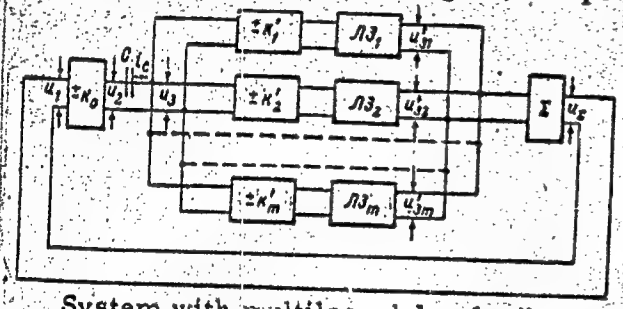
ORG: none

TITLE: Systems with multiloop delay feedback

SOURCE: Radiotekhnika i elektronika, v. 11, no. 3, 1966, 539-544

TOPIC TAGS: feedback amplifier, multiloop feedback, electronic feedback

ABSTRACT: A system (see figure) comprising an amplifier, a few parallel feedback circuits with delay lines, and a summator is theoretically considered; each feedback circuit consists of a coupling quadripole and a delay line; the quadripole may be represented by a transformer or a linear amplifier. The system is described by a differential-difference equation whose solution yields formulas for self-excitation of the system at various



System with multiloop delay feedback

Card 1/2

UDC: 621.372.061.1

L 29199-66
ACC NR: AP6008294

frequencies. It is found that: (1) A system with multiloop delay feedback can be used as a resistance-controlled FM oscillator or as a periodic filter having high ridges in its amplitude-frequency characteristic; (2) Introduction of an additional delay-feedback circuit hampers self-excitation of spurious oscillations. Orig. art. has: 2 figures, 18 formulas, and 2 tables.

SUB CODE: 09 / SUBM DATE: 30Oct64 / ORIG REF: 003

Card 2/2 BLG

ACC NR: AP6033219 SOURCE CODE: UR/0142/66/009/004/0524/0531

AUTHOR: Yakovlev, V. N.

ORG: none

TITLE: Transistorized pulse generators with emitter timing circuits

SOURCE: IVUZ. Radiotekhnika, v. 9, no. 4, 1966, 524-531

TOPIC TAGS: pulse generator, pulse oscillator, transistorized generator

ABSTRACT: Transistorized pulse generators with emitter timing circuits are considered; they permit obtaining low-duty-factor, short, and steep pulses and are distinguished by highly stable repetition frequency. Three circuits that include p-n-p and n-p-n transistors and various emitter couplings are considered. Formulas for calculating generator parameters from a specified pulse duration are derived. Two circuits of sawtooth-voltage generators designed with p-n-p and

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ACC NR: AP6033219

n-p transistors are considered. Experimental verifications included: (1) A pulse generator designed with p-n-p transistors which produced short pulses with a rise time of 0.15 μ sec and a fall time of 0.5 μ sec; its frequency varied by 1% within + 20 + 65C; (2) A sawtooth-voltage generator which produced pulses rising in 320 μ sec and falling in 15 μ sec; with an ambient temperature increase from + 20 to + 65C, the period of oscillations decreased by 2%. Orig. art. has: 8 figures and 23 formulas.

SUB CODE: 09 / SUBM DATE: 27Aug64 / ORIG REF: 004

Card 2/2

YAKOVLEV, V.N.

Calculation of the ice edges in the Sea of Okhotsk. [illegible] TSIP no.146:98-106 '65.

Summary of methods of calculating the drift and compactness of ice in the sea. Ibid.:107-116 (MIRA 18:9)

YAKOVLEV, V.N.

Taxonomy of the family Lycopteridae. Paleont. zhur. no.2: 80-92 '65. (MIRA 18:6)

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